MARSHALL STAR
Marshall Space Flight Center
Aug. 10, 2000
'We bring people to space — We bring space to people'

NASA, Alabama officials sign agreement creating National Space Science and Technology Center

by Sherrie Super

The National Space Science and Technology Center — a venture that will bring together scientists, engineers and educators — became reality Tuesday in Montgomery, Ala., as Alabama Gov. Don Siegelman and Marshall Center Director Art Stephenson formally endorsed a partnership agreement to operate the new center.

U.S. Rep. Bud Cramer of Alabama's 5th Congressional District and Dr. Frank Franz, president of The University of Alabama in Huntsville, joined them in the capitol office for the signing ceremony.

"I am proud to join Congressman Cramer, Mr. Stephenson and Dr. Franz as the state of Alabama and NASA partner to create the National Space Science and Technology Center," Siegelman said.

Photo by Terry Leibold, NASA/Marshall Space Flight Center

Stephenson, left, and Siegelman sign a memorandum of understanding Tuesday on the National Space Science and Technology Center.

"This new facility will allow the best scientists and engineers in the field to work more closely on common goals of technology advancements. The Space Science and Technology Center will be a driving force that will provide expertise and advanced research opportunities never before imagined

*See **NSSTC** on page 5*

NASA plans to launch Mars rover in 2003; possible second rover being studied

In 2003, NASA plans to launch a relative of the now famous 1997 Mars Pathfinder rover. Using drop, bounce and roll technology, this larger cousin is expected to reach the surface of the Red Planet in January 2004 and begin the longest journey of scientific exploration ever undertaken across the surface of that alien world.

Dr. Edward Weiler, associate administrator for the Office of Space Science at NASA Headquarters in Washington, D.C., announced last month that the Mars Rover was his choice from two mission options, under study since March.

"Safety Has No Days Off"
— Safety slogan submitted by
Steve Androlake, ED22

"We have selected the Mars Exploration Program Rover rather than the orbiter option, which was an extremely difficult decision to make," Weiler said.

"At the same time, we want to look into what could be an amazing opportunity, as well as a challenge, by sending two such rovers to two very different locations on Mars in 2003 rather than just one," Weiler added.

"We are evaluating the implications of a two-rover option," Weiler said. "I intend to make a decision in the next few weeks so that, if the decision is to proceed with two rovers, we can meet the development schedule for a 2003 launch."

With far greater mobility and scientific capability than the 1997 Mars Pathfinder Sojourner rover, this new robotic explorer will be able to trek up to110 yards (100 meters) across the surface each Martian day, which is 24 hrs. 37 min. The Mars rover will carry a sophisticated set of instruments that will allow it to search for evidence of liquid water that may have been present in the planet's past, as well as study the geologic building blocks on the surface.

"This mission will give us the first ever robot field geologist on Mars. It not only has the potential for breakthrough scientific discoveries, but also gives us necessary experience in full-scale surface science operations which will benefit all future missions," said Scott Hubbard, Mars Program director at NASA Headquarters.

"A landed mission in 2003 also allows us to take advantage of a very favorable alignment between Earth and Mars."

Key Personnel Announcements

Robert Champion has been selected manager of the Internal Relations and Communications Department within Marshall's Customer and Employee Relations Directorate. He formerly served as team lead for the Vehicle Subsystems Engineering Group with the Space Transportation Directorate.

The Internal Relations and Communications Department serves as the focal point for all internal communications, such as directorate roundtables, "Inside Marshall," "Marshall Star," "Daily Planet," Employee TV, message boards and other electronic distribution systems. The office coordinates and communicates the Marshall strategic and implementation planning. In addition, the office is responsible for gathering and disseminating historical information to the Marshall community.

Champion

Champion joined Marshall in 1986 after graduating from Auburn University with a bachelor's degree in aerospace engineering. Since coming to Marshall, he has served as lead engineer in the Program Development Directorate of the Propulsion Systems Branch. In 1994, he transferred to the Propulsion and Mechanical System Divison of the Propulsion Laboratory where he served as the Product Development Team lead for the X-34 Main Propulsion System design.

Teresa B. Vanhooser has been appointed to the Senior Executive Service position as manager of the Payload Operations and Integration Department in Marshall's Flight Projects Directorate.

Vanhooser joined Marshall in 1980 as an engineer in the Operations Integration Division of the Systems Analysis and Integration Laboratory. Other assignments have included ATLAS mission manager; mission manager of the Microgravity Science Laboratory-1 (MSL-1); and manager of the Space Station Utilization Office. Most recently, Vanhooser served as the manager of the Multiuse Payload Group in the Payload Operations and Integration Department of the Flight Projects Directorate.

She has the distinction of being the first female mission manager for Spacelab missions, and having orchestrated an unprecedented night launch of the ATLAS-2 mission.

Vanhooser holds a bachelor's degree in industrial engineering from Tennessee Technological University in Cookeville, and a master's degree in administrative science/project management from the University of Alabama in Huntsville. She has completed numerous executive and management-level training courses, and is the recipient of several awards including the NASA Exceptional Achievement Medal.

Danny Davis recently was named deputy manager of NASA's Second Generation Reusable Launch Vehicle Program Office.

The program office is working to define requirements and develop and test technologies that will lead to a new reusable launch vehicle that would begin operation in the 2010 timeframe.

Davis graduated from Woodlawn High School in Birmingham, and graduated in 1976 from Auburn University with a bachelor's degree in mechanical engineering. He joined the Marshall Center in 1983 as a design engineer. In 1986, he became a design engineer with the Boeing Co. on the International Space Station. In 1989, he returned to Marshall.

In 1994, Davis was named chief of the solid motor design branch at Marshall. He became team lead of the X-34 upper stage propulsion team in 1995. In 1996, he was named manager of the low cost boost technology project to develop the Fastrac rocket engine that will power NASA's X-34 experimental reusable rocket plane.

Davis received the NASA Exceptional Achievement Medal in 1992 and numerous Group Achievement and Sustained Superior Performance Awards.

Alabama to fund project to widen Martin Road

The State of Alabama will provide funding for the widening of Martin Road from the Sparkman Center on Redstone Arsenal to Memorial Parkway, according to Alabama Department of Transportation Director Mack Roberts.

The project will provide improved access from southeast Huntsville to Redstone Arsenal. It eventually will provide a major arterial connection to the proposed Huntsville Southern Bypass, currently under design.

Roberts made the announcement on behalf of Alabama Gov. Don Siegelman.

One section of the Martin Road project will be located on Redstone Arsenal property and will extend 1.4 miles from the end of the existing four-lane to the Arsenal boundary. The second section will extend two miles from the Arsenal boundary to Memorial Parkway. The estimated cost of the entire project is $9 million.

Design work is complete on the section of Martin Road located outside Redstone Arsenal, and the state will take bids for construction later this year. Design began on the section inside the Arsenal last month. Bids will be taken for construction in about 10 months.

Marshall marks 40th anniversary

Space Science in 1970s increases scientific results

This is the seventh in a series of historical articles the Marshall Star will publish this summer on the history of the Marshall Center.

by Mike Wright

Increased scientific results from space served as the theme for the Marshall Center during the late 1970s as it moved from Saturn to Skylab to Space Shuttle.

Earlier Marshall missions like Project Highwater and Pegasus had demonstrated that space was a laboratory for doing science. In addition, the Apollo 14 mission in 1971 had included three Marshall-developed experiments investigating the potential for materials processing in space.

That same year, closer to Earth, the Marshall Center had launched the 36-inch Stratoscope II astronomical telescope from Redstone Arsenal. Carried by a special balloon, the telescope photographed scientific targets from an operating altitude of 82,800 feet.

Again, in the last half of the 1970s, the scientists at the Marshall Center used this early science as a foundation to branch into more expanded space science missions. Space would provide Marshall scientists with a global view of our planet for atmospheric observations, a microgravity environment for experiments in life sciences and materials sciences and an opportunity to study the radiation and vacuum of space.

Some of the missions were significant in their own merit. Others would serve as forerunners to more ambitious payloads in the 1980s and 1990s.

The value of space-based observatories was reinforced by the success of the High-Energy Astronomy Observatory (HEAO) series of spacecraft: HEAO-1, HEAO-2 and HEAO 3. Launched in 1977, 1978 and 1979 respectively, the three unmanned spacecraft were designed to study high-energy radiation in the universe such as X-rays, gamma rays and cosmic rays.

The Marshall Center played a major role in the project development and management, while Marshall's laboratories were heavily engaged in the technical and scientific aspects — an undertaking that included the construction of the Marshall X-ray Calibration Facility — the largest and most sophisticated facility of its type in the world.

In 1976, Marshall launched the Laser Geodynamics Satellite (LAGEOS), which the Center had conceived and manufactured in Huntsville.

Basically a mirror in space, the 900-pound, 2-foot diameter satellite was designed to precisely reflect laser beams from ground stations for extremely accurate ranging measurements. This allowed the satellite to measure movements of Earth's crust. Movements of less than an inch could be detected by timing the laser beam's 3,700-mile round trip.

LAGEOS was designed to serve as a ranging system for improved understanding of earthquakes, continental drift and other geophysical phenomena.

Also in 1976, Marshall launched the Gravitational Redshift Probe. The purpose of the 125-pound satellite was to test the principle of equivalence in Einstein's general theory of relativity. According to theory, but never demonstrated, a clock will appear to run faster in a weaker gravitational field, at a greater distance from Earth.

Scientists from Marshall and the Smithsonian Astrophysical Observatory in Cambridge, Mass., jointly devised an ingenious experiment to test the theory. A very stable atomic clock was launched through Earth's gravitational field to a peak altitude of 6,200 miles, and its reading during the free flight was compared with that of an identical reference clock on the ground. The experiment confirmed the theory. Marshall had overall management responsibility for the construction, integration and systems testing of the satellite.

From 1975 through 1983, Marshall conducted one of its most successful efforts involving small payloads, the Space Processing Applications Rockets project. Marshall accomplished 10 suborbital flights, which altogether carried several dozen small materials processing experiments. Intriguing results were achieved in the 5-minute periods of near weightlessness as the rocket passed through its apex.

The writer is the Marshall Center historian.

Photo by Doug Stoffer, NASA/Marshall Space Flight Center

Who was George C. Marshall?

Paula Cushman, right, museum curator of the George C. Marshall Foundation in Lexington, Va., explains some of Marshall's accomplishments to Tammy Simmons of Marshall's Chief Counsel's Office. The exhibit, on loan from the foundation, is set up in the lobby of Bldg. 4200. It provides a comprehensive biographical narrative of one of the nation's premier soldier/statesmen. Marshall Space Flight Center is named for U.S. Army Gen. George C. Marshall.

Paul Meyer combines science background with love of caving in his bid to help the community

by Debra Valine

Madison County has the highest levels of radon gas in the homes tested in all counties in Alabama. Nearly 50 percent of the homes tested in Huntsville exceed Environmental Protection Agency standards. But the problem is easily and inexpensively fixed once detected.

Radon is an invisible, odorless gas that forms from decaying material in the soil. It is the No. 2 cause of lung cancer in America, and women are more susceptible to contracting cancer through radon because they typically spend more time in the home.

Paul Meyer, an atmospheric scientist at Marshall's Global Hydrology and Climate Center, is combining his off-duty time with his hobby of caving to educate the public on the risks associated with radon.

Meyer, a native of St. Louis, Mo., has worked at Marshall for more than 15 years. He started under a research grant coordinated through his adviser at St. Louis University while completing his master's degree in meteorology.

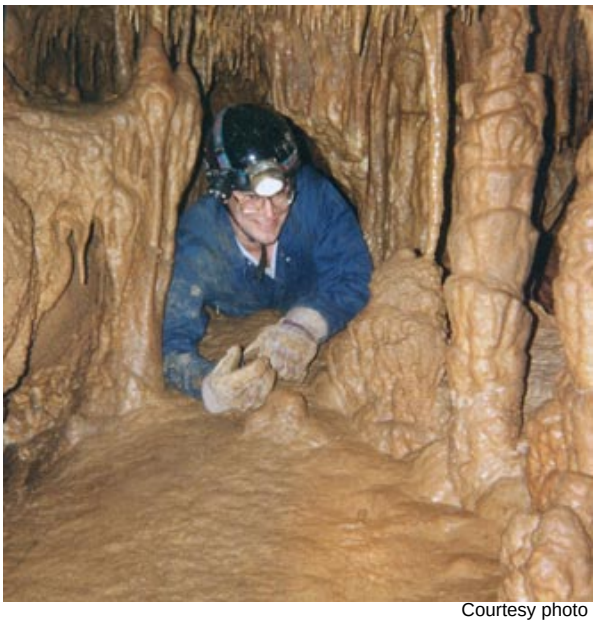
"I got to know the people at Marshall and they offered me a full-time job when I graduated," said Meyer, who also has a master's degree in computer science from the University of Alabama in Huntsville. "Mostly I develop and maintain our Web site — http://www.ghcc.msfc.nasa.gov". He uses his computer graphics expertise to help other scientists better understand their research through visualization of their research.

When the Marshall Center gets an off-site request that involves expertise in image interpretation, Meyer is called to action.

In 1986, he worked on the Challenger accident investigation team, reviewing photos to determine what was happening with the vehicle.

In 1996, his expertise was called in again following the bombing at the Atlanta Olympics. The FBI contacted Marshall to help investigate. "Dave Hathaway and I helped the FBI work on image enhancement," Meyer said. That work led Meyer and Hathaway to develop VISAR, a video stabilization program for which Marshall applied for a patent last year. "We got tired of doing everything manually so we developed a way to do it with technology."

Meyer also is a man of action in his off time. "I enjoy hiking, caving and being out in the woods," He said. "As a child, I used to go to commercial caves and I guess that was the beginning of my interest in caves. I combined the two and now I do my hiking under ground. It's just a little more dangerous."



Courtesy photo

Meyer crawls through an opening at Cathedral Caverns near Grant, Ala.

It may be fun for Meyer, but it is helpful for the community. He is the conservation chairman for the Huntsville Grotto, the local chapter of the National Speleological Society, headquartered in Huntsville, and a member of the cave rescue team. He is involved in protecting endangered species, such as bats; works with the University of Alabama in Huntsville on ground water education; and works with Auburn University to educate the public about radon gas.

Sabrina Hill, a radon specialist with the Alabama Cooperative Extension System in Madison County, said Meyer has been the key to getting information about radon to the public.

"First of all, he's a scientist," Hill said. "He's dedicated to helping the community any way he can. He puts long-term radon test kits in caves in the Huntsville area and monitors the fluctuating levels of radon gas. When he talks to people about the caves and the radon levels he has detected there, they tend to listen.

"Of close to 1,000 homes tested for radon in Huntsville, nearly 50 percent of them have a serious radon problem," Hill said. "It's nobody's fault, it's geology. Huntsville is situated on top of caves, sink holes, fissures and other geological features that make it easier for radon gas to reach the surface. That's why the test kits in the caves are so important."

Radon test kits are available through Hill's office at 819 Cook Ave. in Huntsville for $12.95. "The test kit looks like a two-story roach hotel," Hill said. It includes the test kit, an envelope to send the kit to the Radon Environmental Monitoring Laboratory in Northbrook , Ill., the analysis of the data, and a report of the results.

"You just place it on an end table or someplace and forget about it," Hill said. "You need to leave the kit for at least several months before sending it in for evaluation. Radon levels fluctuate a lot so you need to get an averaged reading."

If you determine there is a radon problem in your home, fixing the problem costs $300-$500. Hill's office can help locate businesses that can seal the house, or provide a vent so the radon gas can escape.

For more information about radon, call 532-1578, or visit the Web at: http://www.epa.gov/iaq/radon/index.html

The writer, employed by ASRI, is the Marshall Star editor.

NSSTC

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possible not only for NASA's mission but also for the growing medical research and medical technology sector in Alabama," Siegelman said.

"This collaboration will support and enhance the Marshall Center's role in America's space program," Stephenson said. "This synergy between science, technology and education has the potential to improve space missions, elevate Alabama's higher-education system to the next level and even create better consumer products."

The core facility, located in a 120,000 square-foot facility on Sparkman Drive in Huntsville, opens this month. A 60,000 square-foot laboratory annex is planned in 2001. Once completed, the core facility will house approximately 450 people to include NASA, other government agencies, academia and private industry. In addition, virtual capabilities are located throughout the state and nation at partner facilities.

The signing ceremony at the Governor's Office in Montgomery was a critical milestone in a process that began in 1995, when NASA Administrator Dan Goldin advocated establishing a new science institute in Huntsville.

The center will be operated through a partnership between the Marshall Center and the Alabama Space Science and Technology Alliance — a group of six Alabama universities including the University of Alabama in Huntsville, Alabama A&M University in Normal, Auburn University in Auburn, the University of Alabama at Tuscaloosa, the University of Alabama at Birmingham and the University of South Alabama in Mobile.

"The National Space Science and Technology Center represents an innovative method in advancing research and education for NASA and Alabama's research universities," said Franz. "Large projects often require multi-disciplinary research, and many times a single university will not have all of the expertise necessary to compete on major contracts. The collaboration created through the NSSTC will enhance the competitiveness of Alabama's research universities seeking research contracts."

The Marshall Center's space science and technology expertise will provide the core for the new center, focusing on research in space science, materials science, biotechnology, Earth sciences, propulsion, optics and other areas that support NASA's mission.

"Tuesday's signing reinforces North Alabama's leadership in high technology," Cramer said. "This center has great potential to strengthen the education process in the state. We have great minds in Alabama and the center will give their potential room to grow. The center will offer opportunities for collaboration with private industry, other federal agencies and universities from around the world."

The writer, employed by ASRI, supports the Media Relations Department.

Countdown to Safety Bowl

Marshall's Safety Bowl begins Aug. 30 and culminates with the championship on Safety Day, Oct. 25. Teams from each directorate will compete. For more information, call Irene Taylor at 544-2051.

Sample Questions

1. Heat index is a measure of the contribution that humidity makes with high temperatures in reducing the body's ability to cool itself. With an air temperature of 95 degrees Fahrenheit, and 90 percent humidity, what would the heat index be?

a) 101 degrees F
b) 120 degrees F
c) 135 degrees F
d) 150 degrees F

2. If you witness an unsafe act that is putting someone in immediate danger, you should?

a) Fill out form NS1372.
b) Stop the unsafe act.
c) Report it at the next Safety, Health and Environmental meeting.
d) Leave before someone sees you.

3. If you frequently suffer from insomnia, you should:

a) watch all-night TV shows
b) eat a large meal before going to bed
c) drink coffee or other beverage with caffeine
d) avoid alcohol, tobacco, and caffeine in the evening

4. Executive Order 13043, signed in April 1997:

a) Requires that all federal employees use seat belts while on official business
b) Requires motor vehicle occupants to use seat belts on Department of Defense installations
c) Encourages federal contractors, subcontractors and grantees to adopt and enforce on-the-job seat belt use policies and programs
d) All of the above

5. New employees represent both opportunities and risks. Workers on the job for less than one year are responsible for what percentage of nonfatal lost time injuries?

a) 5
b) 10
c) 15
d) 30

*See **Answers** on page 7*

Marshall employee embarks on a mission to bring 'Jetson' technology to real Americans

by Sherrie Super

Like many Americans, Lawanna Harris grew up watching "The Jetsons." Today, she is embarking on a journey to make space-age technology — like that found in the popular cartoon series — her life's work. And, she's well on her way.

An engineering technician at Marshall, Harris recently was named Outstanding Engineering Student of the Year by Alabama A&M University in Normal. She also was selected by the American Institute of Aeronautics and Astronautics to present her research on a rocket-based combined cycle engine for future generation space travel.

Her paper is one of approximately 3,500 papers published each year by the 30,000-member global organization. "I knew I'd be working on technology that would be realized out of the Jetson cartoons," Harris said of her research.

"We've made such subtle advances that, like most Americans, we think it's something normal. But it's not. The reason we have improved medical technology, cell phones, pagers and fast-networking computers is because of the exploration and experimentation we've done in space."

Her senior design paper, presented at the Year 2000 Joint Propulsion Conference Session, held last month in Huntsville, describes the technical and economical feasibility analysis of an innovative propulsion system designed utilizing the rocket-based combined cycle concept.

Her results support the development of a 1/20-scale prototype engine for evaluation and testing. The STEPER-engine (Space Transportation Engine Prototype for Engineering Research) has been designed to power a reusable launch vehicle.

NASA's goal is to reduce today's cost of roughly $10,000 per pound of payload to hundreds of dollars per pound within 25 years and tens of dollars per pound within 40 years.

"My conceptual design addresses some of the economic and technical issues of making access to space more affordable. The STEPER engine was designed with features geared to increase reliability and maintainability, therefore increasing safety and reducing the cost of fabrication and operation," she said.

Photo by Dennis Olive, NASA/Marshall Space Flight Center

Harris stands in front of Rocket Park off Rideout Road.

It's been an "exciting year" for Harris, who earned her bachelor's degree in mechanical engineering from Alabama A&M University in the spring. She plans to use her degree to continue space-related research.

"There's so much we have yet to discover from space exploration — new medicines and new materials that could help people on a daily basis," she said. "We've only skimmed the surface of information available in space. I'd like to help make it more affordable to get there."

Harris is now working at the Marshall Center on propulsion systems design for the X-38, the emergency crew return vehicle for the International Space Station.

A native of Huntsville, Harris is the daughter of Carrie and Chester Harris.

The writer, employed by ASRI, supports the Media Relations Department.

Inspect coffee cans to ensure there are no burrs

A Marshall employee recently was measuring coffee out of a 2-pound, 2.5-ounce can and noticed a slight scraping across his wrist. Upon inspection of the can, he noticed a rather large burr on the inside lip of the can.

He inspected 20 opened cans located in the immediate area and discovered five others with large burrs. This is a 25 percent incident ratio of dangerous burrs being left on cans, with the potential for a serious cut.

What you can do:

- Carefully inspect cans upon opening to prevent cuts by burrs.
- Transfer contents of can to another container to prevent exposure of burrs to other employees.

Ask "Dr. Know"

Web site answers employees' questions

Editor's note: The Web site that is the focus of this article is designed to speak with a German accent; however, to hear the accent, you must use Internet Explorer as your browser.

Do you have a question related to safety, health or environmental issues that needs to be answered? If you don't know whom to ask, Dr. Know might be able to help. Dr. Know is your encyclopedia for safety, health and environmental issues.

The questions directed to Dr. Know should be inquiries that do not need immediate attention, such as emergencies or mishaps. Also, Dr. Know is here to educate Center employees, not diagnose illness or injury.

Here is a question that Dr. Know will not answer: I hurt my back lifting. What kind of medication should I be taking? Questions Dr. Know will answer include, Is skin cancer hereditary? or What are the proper techniques for lifting boxes correctly?

Submit your question to Dr. Know at: http://msfcsma3.msfc.nasa.gov/she/dr_know.htm

A subject expert from the Marshall Safety, Health and Environmental Offices will answer your question. It will be posted in a database with other "Frequently asked Questions." Center employees can view existing answers in the database to see if the question they are asking has been answered. If you want a response mailed directly back to you, include your e-mail address.

Answers

Continued from page 5

1. d) 150 degrees F.

Important: Since heat index values were devised for shady, light wind conditions, exposure to full sunshine can increase values by up to 15°F.

2. b) Stop the unsafe act.

3. d) avoid alcohol, tobacco and caffeine in the evening

If you're hungry, have a light snack. A heavy meal can disturb sleep. Alcohol can cause repeated early morning awakenings and sleep apnea. Tobacco and caffeine also can disrupt sleep.

4. d) All of the above

5. d) 30 percent, according to the U.S. Bureau of Labor Statistics. After his or her first day on the job, a new employee should know how much Marshall and his or her supervisor values safety. Even if the new employee has years of work experience, he or she may never have worked for an organization that made safety a priority.

If you would like to join the Marshall Safety and Health Action Team, call Joel Best at 544-3788. For more Safety Bowl questions, see "Inside Marshall," "The Daily Planet" and ETV.

Center Announcements

- ***NCMA Meets —*** The Huntsville Chapter of the National Contract Management Association (NCMA) will be having a luncheon at 11:30 a.m. Aug. 17, in the Bldg. 4203 cafeteria. Cost is $10. Guest speaker information can be found by reviewing the Huntsville Chapter's NCMA Web page at: http://www.ncmahsv.org. For reservations, send an e-mail to: dpelham@hiwaay.net or call 533-3954 by Tuesday.
- ***Center History Video —*** As part of the Marshall Center's plans to mark its 40th anniversary, a video presentation depicting various highlights in the Center's 40-year history will be produced. The production will include 35-50 adults and 20 children, ages 10 and older from the Marshall team, their children and retirees. Interested participants should e-mail Larry Fine at: larry.fine@msfc.nasa.gov.
- ***Marshall Retiree Dinner —*** The annual dinner honoring last year's 238 Marshall retirees will be at 6 p.m. Aug. 17 at the Von Braun Center North Hall. The event will celebrate Marshall's 40th anniversary. Following a dinner of prime rib or honey dijon chicken, employees will perform skits. Tickets are available through admin officers. All employees are invited.
- ***Free LabVIEW Class —*** A free 3-hour hands-on introduction to LabVIEW will be held from 8:30-11:30 a.m. Aug. 22 in Bldg. 4200, room G-17. This session is designed for those new to LabVIEW or evaluating it for a particular application. All members of the Marshall community are welcome. Class size is limited to 15, and available on a first-come, first-serve basis. To reserve a seat, e-mail: derek.mayer@msfc.nasa.gov
- ***New Blue Cross/Blue Shield Rep —*** Guy Jones is no longer serving as the federal employee representative. He is now marketing manager for a new Blue Cross/Blue Shield program. Until a new representative is selected, direct all inquiries to Debbie Allen at 544-7536.
- ***NARFE Meets —*** The National Association of Retired Federal Employees (NARFE) will meet at 9:30 a.m. Saturday at the Senior Center on Drake Avenue. The four candidates for Huntsville mayor have been invited to participate in a forum. For more information, call 837-0382 or 881-3168.
- ***MOO Meets —*** The Management Operations Office (MOO) retirees will meet for breakfast/lunch at 10 a.m. Aug. 24 at the Cracker Barrel Restaurant in Madison. For more information, call 539-0042.
- ***ASEM Meets —*** The American Society of Engineering Managers (ASEM) will meet at noon Aug. 29 at the Redstone Officers' and Civilians' Club. For membership and meeting information, call 544-3645.

Employee Ads

Miscellaneous

★ Health-O-Meter scale, white, $7; old antique brass bed, full size, $375. 881-8648
★ Brunswick bumper pool table w/table top cover, four feet square, cherry wood, $250. 882-2369
★ Front door w/reversible hinges, knocker and lock, steel, foam-filled, 6-panel, 36"x80", $50. 881-6040
★ Electric stove, 20" wide, four surface heating units, $125 obo. 536-2629
★ Bike carrier, $10; trike, $15; slide, $5. 881-4148
★ Apartment-size stackable washer and dryer, $80 set; queen-size wall unit, $200 obo. 721-2641 after 6 p.m.
★ Utility trailer, 5'x8', tilt bed, trailer lights, side rails, $425. 351-7804
★ Whirlpool A/C, 6,000 btu, 3-speed, $150; Emerson A/C, 6,500 btu, Quiet Cook, $115. 837-0625
★ Wooden hobby horse kits, $8 each. 883-2125
★ 1997 Champion 181SC bass boat w/150HP MAG3 motor, 3 depth finders, $13,500. 776-4624
★ Washburn D10 acoustic guitar, black, $200 obo; Arbor acoustic guitar, natural, $150 obo. 776-2612
★ Utility trailer, 6'X7', $85. 830-9740
★ Three excellent floor seat tickets to Barney Live Show at VBC, 7 p.m. Sept. 13, $87. 830-5285
★ Weslo Cadence treadmill, 1.5HP, 0-8 mph extended stride, auto incline, $100. 881-3353
★ Apartment-size stackable washer/dryer, $80 set; French Provincial, dark finish, 5-piece bedroom set, $375 obo. 534-3393 after 6 p.m.
★ Oriental wool rug, handmade, 9'x12.5', red/blue/ivory colors, $1,650. 232-8804
★ Fireplace insert, Ember Hearth w/electric blower, $100. 534-8961
★ Honda motorcycle, XL350, street or trail, $900. 852-0142
★ Ibanez sound gear SR300 bass guitar w/ Hardshell case, $285; Fender BXR-300C bass amp, 30-amp,15" speaker, $375. 971-0571
★ "Signing Naturally Student Workbook Level 1", and videotape, new, $50. 858-0272/843-1929 pager
★ Boys clothes, sizes 4 to 8, Oshkosh, Gymboree, etc., winter/summer, $1 to $5 per item. 533-5942
★ Antique oval coffee table, made in Italy, marble top, hand carved flowers, $350; Honda 1000W generator, $699. 881-7000
★ Ashley wood burning fireplace insert, electric circulating fan, used 3 yrs., $50. 729-8020
★ Kenmore refrigerator, side-by-side, tan, 19 cu. ft., icemaker, $165. 883-4276
★ "Signing Naturally" Level 1 Handbook/ videotape, $50; Grandfather clock, $900; German porcelain clowns, $30-$50. 851-0704/852-5107
★ Hoyt USA Pro vantage impulse bow, sights, limb-savers, stabilizer, quiver, etc., $230. 883-6416

Vehicles

★ 1972 GMC pickup truck, LWB, PB/PS, air, $1,500 obo. 881-9421
★ 1989 Chevy C1500, Silverado, LWB, bedliner, black/silver, 350, EFI, one family owner, 164K, $4,950. 837-2386
★ 1983 Mercury Marquis, automatic, a/c, PS/ PB, rear wheel drive, am/fm, $950. 883-6284
★ 1996 Mazda 626 LX, V-6, 64K miles, 25 mpg, white, 5-speed, $9,000. 574-5098
★ 1997 Nissan 240SX-SE, green, 5-speed, all-power, moon-roof, spoiler, CD-player, alloy wheels, 47K miles, $12,000. 881-5297
★ 1991 Cadillac, sedan DeVille, black, $3,500 obo. 880-7106
★ 1998 Mustang GT, silver, V-8, 5-speed, MACH, stereo, all power, 31K miles, one-owner, factory warranty. 464-8088
★ 1986 BMW 535I, 5-speed, new paint, $2,900; set of MAG wheels w/tires, wide, low profile, 15", $150. 837-4136
★ 1993 Nissan king-cab, automatic, maroon w/pearl gray camper shell, chrome wheels, $4,800. 880-9025
★ 1992 Olds Cutlass, 4-door, blue, 140K miles, $3,250; 1989 GMC Jimmy, red, 5-speed, $3,000. 837-0559
★ 1993 Plymouth Voyager, V-6, gray, 107K miles, $4,200. 883-0103
★ 1995 Buick LeSabre, beige metallic, all power, 65K miles, $10,500 obo. 539-3858
★ 1986 Mazda RX7, 5-speed, sunroof, alloy wheels, some new parts, $1,000 obo. 772-5955
★ 1997 Pontiac Firebird convertible, black, 34K miles, all power, CD changer, under warranty, $16,500. 890-9147
★ 1995 Mustang GT 5.0, 5-speed, dark green/ tan leather, 71K miles, a/c, abs, $10,500 obo. 864-2655
★ 1982 Dodge 250 RAM conversion van, P/S, P/B, a/c, 4 captains chairs, plus sofa bed, $1,200. 883-2653
★ 1992 Acura Integra, 2-door hatchback, 5-speed, sun-roof, a/c, power windows, am/fm stereo cassette, cruise, $5,400. 764-2492

Free

★ Windsurfing sails, booms, fins, etc. 534-1461

Found

★ Portfolio near Bldg. 4312. Call 544-4758 to identify
★ Sunglasses found in Lobby of Bldg. 4312. Call 544-4758 to identify
★ Eyeglasses in South Parking Lot of Bldg. 4200. Call 544-4758 to identify

Wanted

★ Large dog house in good condition. 461-8369

Sports

Tennis Tournaments — The MARS Tennis Club will host a "Women's Open Doubles Tournament" Aug. 12, and a "Men's Open Doubles Tournament" Aug. 19. Both tournaments begin at 8:30 a.m., with warm-up starting at 8 a.m. Open Doubles means each member can invite a guest as their partner, and pay a guest fee of $3. To participate in the women's tournament, call Bernice Bowling at 544-0453. To participate in the men's tournament, call Bill Boglio at 544-3806.

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